# SCERT, AP

## MODEL PAPER – 1 (2024-2025)

**CLASS - 10**

**GENERAL SCIENCE - Paper – I (Physical Science)**

**Time: 2 Hours** **(English Version)** **Maximum Marks: 50**

**Instructions:**

1. Question paper consists of 4 sections and 17 Questions.
2. Internal Choice is there only for Q.No.12 in Section –III and for all the Questions in Section –IV.
3. In the duration of 2 hours, 15 minutes of time is allotted to read the Question paper.
4. All answers should be written in the answer booklet only.
5. Answer should be written neatly and legibly.

**SECTION - I** **8 x 1 = 8**

**Notes:** 1. Answer **ALL** the questions.
2. Each question carries **1** mark.

**1.Why do we apply paint on iron articles?**

**Ans:** By applying paint on iron articles, they can be prevented from corrosion. Paint does not allow air and moisture to come in contact with the surface of iron.

**2. Bases which are soluble in water are called _____**

**Ans:** Alkalis

**3.**

| Solution | A | B | C | D | E |
|---|---|---|---|---|---|
| pH value | 4 | 1 | 12 | 7 | 9 |

**Which is the strong acid solution among the solutions given in the table?**

**Ans:** B

**4. What are amphoteric oxides?**

**Ans:** Such oxides which react both with acids as well as bases to form salts and water are known as amphoteric oxides.

**5. Write any one industrial application of hydrogenation.**

**Ans:** It is used in the production of saturated vegetable ghee from unsaturated vegetable oils

**6. The human eye forms the image of an object at its**

**a) cornea** **b) iris** **c) pupil** **d) retina**

**Ans:** d) retina

**7. Draw the symbol of the electric bulb.**

**Ans:**

**8. 1 KWH how many joules?**

**Ans:** Kilo Watt Hour (or) KWH

**SECTION - II** **3 x 2 = 6**

**Notes:** 1. Answer **ALL** the questions.
2. Each question carries **2** marks.

**9. General formula of alkanes is $C_nH_{2n+2}$. Write the first two alkanes**

**Ans:** $CH_4$, $C_2H_6$

**10. Why do we prefer a convex mirror as a rear-view mirror in vehicles?**

**Ans:** Convex mirror always forms virtual, erect and diminished images irrespective of distance of the object and also enables a driver to view large area of the traffic behind him.

**11. Why is the series arrangement not used for domestic circuits?**

**Ans:** In case of series arrangement, if one component fails the circuit is broken and none of the components works. So,the series arrangement is not used for domestic circuits.

## SECTION - III 3 x 4 = 12

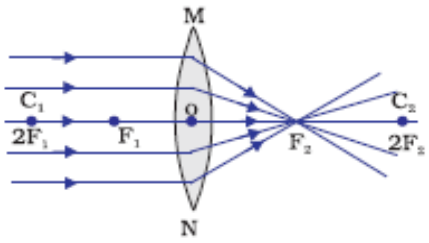
**Notes:** 1. Answer **ALL** the questions.
2. Each question carries **4** marks.

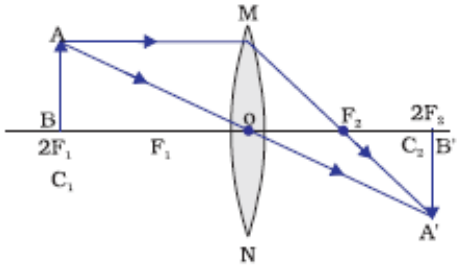
**12.** Draw any one of the following diagrams:

**(A) Draw the ray diagrams of image formed when the object is placed infront of a bi-convex lens in the following positions.**

**(a) At infinity** **(B) At $2F_1$**

**Ans:**




**(B) Draw the diagram which shows that acid solution in water conducts electricity.**

**Ans:**

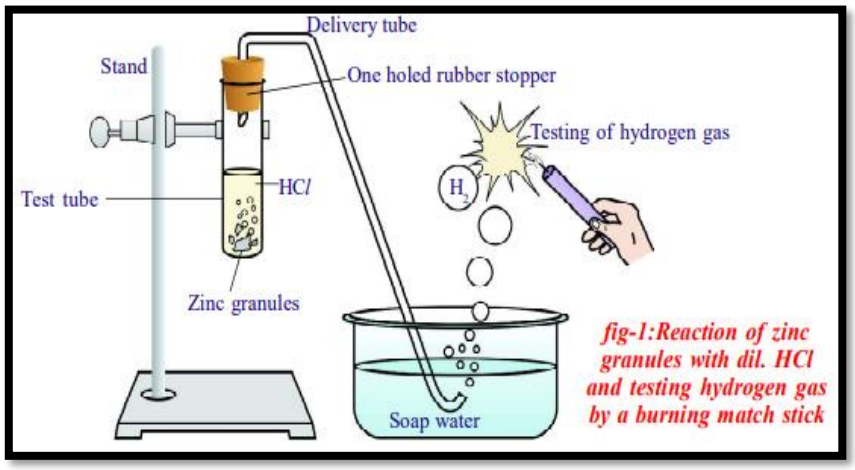



*fig-1:Reaction of zinc granules with dil. HCl and testing hydrogen gas by a burning match stick*

**13. Fresh milk has a pH of 6. How do you think the pH will change as it turns into curd? Explain your answer.**

**Ans:** The $p^H$ of milk 6 it contains lactose and small quantity of lactic acid. When milk turns to curd the Lactose present in milk turns lactic acid hence $p^H$ of solution decreases.

**14.**

| Material medium | Air | Ice | Ruby | Benzene |
|---|---|---|---|---|
| Refractive Index | 1.0003 | 1.31 | 1.71 | 1.50 |

**Observe the table and answer the following questions.**

**i) Which material medium is optically rarer?**
**ii) Which material medium is optically denser?**
**iii) Write the relation between refractive index and speed of light in the medium?**
**iv) What is the SI unit of Refractive Index?**

**Ans:** i) Air
ii) Ruby
iii) $n \alpha 1/v$ (or) Inversely proportional
iv) No unit

## SECTION - IV 3 x 8 = 24

**Notes:** 1. Answer **ALL** the questions.
2. Each question carries **8** marks.
3. Each question has internal choice.

**15. Explain, how do you correct the eye defect Myopia with a suitable diagram.**

**Ans**: i) Myopia is also known as nearsightedness.

ii) A person with myopia can see nearby objects clearly but cannot see distant objects distinctly.

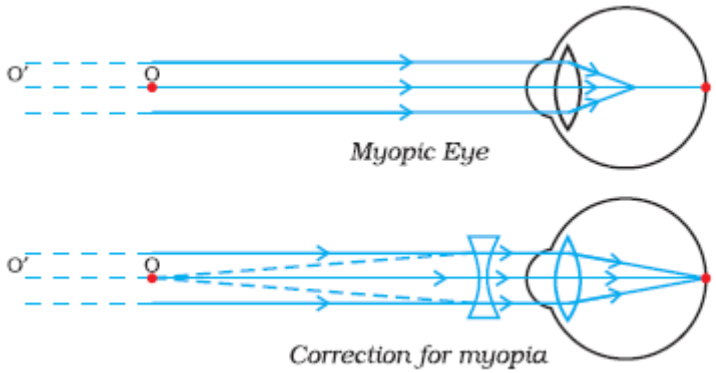
iii) A person with this defect has the far point nearer than infinity. Such a person may see clearly upto a distance of a few metres.

iv) In a myopic eye, the image of a distant object is formed in front of the retina and not at the retina itself.

v) This defect may arise due to i) excessive curvature of the eye lens or ii) elongation of the eyeball.

vi) This defect can be corrected by using a concave lens of suitable power.

vii) A concave lens of suitable power will bring the image back on to the retina and thus the defect is corrected.




**(OR)**

**Deduce the expression for the equivalent resistance of three resistors connected in parallel in an electric circuit.**

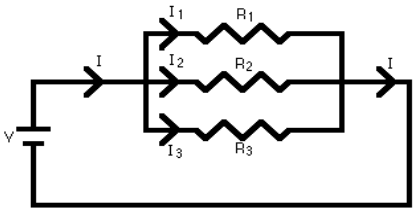
**Ans:** In parallel connection of resistors there is same potential difference at the ends of the resistors. .Hence, the potential difference is equal to V.

On applying Ohm's law to each resistor

$I_1 = V/R_1$

$I_2 = V/R_2$

$I_3 = V/R_3$




Let R be the equivalent resistance of the combination of resistors in seri

Also $I=V/R_p$

$I= I_1+I_2+I_3$

$V/R_p=V(1/R_1+1/R_2+1/R_3)$

$1/R_p= 1/R_1+1/R_2+1/R_3$

The reciprocal of the equivalent resistance of a parallel combination is equal to the sum of the reciprocals of the individual resistances.

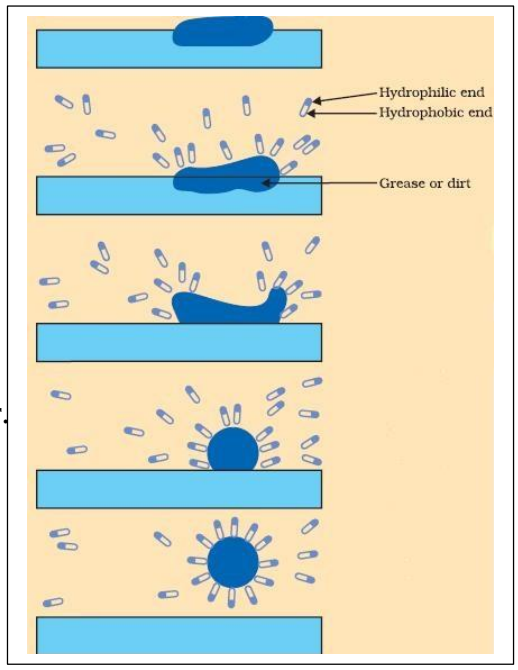
**16. What are the differences between displacement and double displacement reactions? Write equations for these reactions.**

**Ans:**

| Displacement reaction | Double displacement reaction |
|---|---|
| The reaction in which an element has displaced or removed another element from the molecule is called displacement reaction. | The reaction in which there is an exchange of ions between the reactants are called double displacement reactions. |
| More active element displaces a less active element. | Two different atoms or ions are exchanged. |
| Generally reaction time is slow. | Generally reaction time is fast. |
| Ex: $Mg (s) + 2HCl (aq) \rightarrow MgCl_2 (aq) + H_2 (g)$ | $NaSO_4(aq) + BaCl(aq) \rightarrow BaSO_4 (s)+ 2 NaCl(aq)$ |

**(OR)**

**Explain the mechanism of the cleaning action of soaps.**




**Ans:** i) Soaps are molecules in which the two ends have differing properties, one is hydrophilic, that is, it interacts with water,while the other end is hydrophobic, that is, it interacts with hydrocarbons.

ii) When soap is at the surface of water, the hydrophobic 'tail' of soap will not be soluble in water and the soap will align along the surface of water with the ionic end in water and the hydrocarbon 'tail' protruding out of water.

iii) Inside water, these molecules have a unique orientation that keeps the hydrocarbon portion out of the water.

iv) Thus,clusters of molecules in which the hydrophobic tails are in the interior of the cluster and the ionic ends are on the surface of the cluster.

v) This formation is called a micelle. Soap in the form of a micelle is able to clean, since the oily dirt will be collected in the centre of the micelle.

vi) The micelles stay in solution as a colloid and will not come together to precipitate because of ion-ion repulsion.

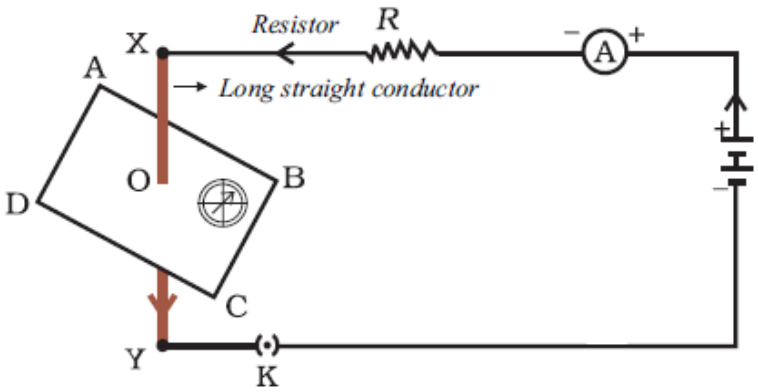
vii) Thus, the dirt suspended in the micelles is also easily rinsed away.

**17. Explain the procedure to show that compass needle is deflected on passing an electric current through a metallic conductor (Oersted's experiment)**

**Ans:**

**Aim:** To show that compass needle is deflected on passing an electric current through a metallic conductor.

**Required Materials:** Thick copper wire, Magnetic compass, Card board, Resistor, Ammeter, Key.




**Procedure:** 1. Take a straight thick copper wire and place it between the points X and Y in electric circuit as shown in the figure.
2. The wire XY is kept perpendicular to the plane of paper.
3. Horizontally place a small compass near to this copper wire.
4. See the position of its needle.
5. Pass the current through the circuit by inserting the key into the plug.

**Observations:** 1. We observe that the needle is deflected.
2. The electric current through the copper wire has produced a magnetic field around it.

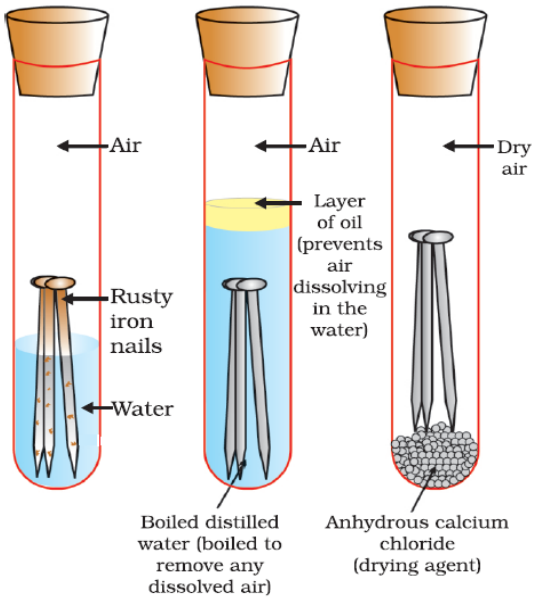
**(OR)**

**Suggest an activity to prove that the presence of air and water are essential for corrosion. Explain the Procedure.**

**Ans:**

**Aim:** Investigate the conditions under which iron rusts.

**Required Materials:** Test tubes, Iron nails, Water, Boiled distilled water, Anhydrous calcium chloride.




**Procedure:** i) Take three test tubes and place clean iron nails in each of them.
ii) Label these test tubes A, B and C. Pour some water in test tube A and cork it.
iii) Pour boiled distilled water in test tube B, add about 1 mL of oil and cork it. The oil will float on water and prevent the air from dissolving in the water.
iv) Put some anhydrous calcium chloride in test tube C and cork it. Anhydrous calcium chloride will absorb the moisture, if any, from the air. Leave these test tubes for a few days and then observe figure.

**Observation:** i) We observe that iron nails rust in test tube A, but they do not rust in test tubes B and C.
ii) In the test tube A, the nails are exposed to both air and water. In the test tube B, the nails are exposed to only water, and the nails in test tube C are exposed to dry air.